

## CLAIMS

We claim:

1. A bridge for use in surgery on the vertebrae of the spine of a subject, said bridge comprising:

a first support member for attaching at one end to a first vertebra in said spine of the subject;

at least a second support member for attaching at one end to a second bone of the subject; and

a cross member attached to said first and second support members at positions remote from said ends of said support members attached to said subject, such that said cross member is positioned proximate said spine of said subject.

2. A bridge according to claim 1, and wherein said second bone of the subject is a second vertebra of the subject's spine.

3. A bridge according to claim 1, and wherein said second bone of the subject is the subject's skull.

4. A bridge according to claim 1, and wherein said second bone of the subject is the subject's pelvic bone.

5. A bridge according to any of claims 1 to 4 and wherein said bridge is free to move with movement of said spine of the subject.

6. A bridge according to any of claims 1 to 5 and wherein said first support member is attached to said first vertebra in said spine of the subject by means of a bone clamp.



7. A bridge according to any of claims 1 to 5 and wherein said first support member is a K-wire.

8. A bridge according to any of claims 1 to 7, and also comprising at least one additional support element for attaching said cross member to at least one additional vertebra of said spine, such that said first vertebra, said second bone and said at least one additional vertebra have fixed positions relative to said bridge.

9. A bridge according to claim 8, and wherein said at least one additional support element is a K-wire.

10. A bridge according to any of claims 1 to 9, and wherein said cross member is adapted to accommodate a surgical robot, such that said robot can perform surgical procedures on at least one of said vertebrae.

11. A bridge according to claim 10, and wherein said surgical robot can be accommodated at any of a plurality of predefined positions along said cross member, such that said robot can perform surgical procedures on a plurality of said vertebrae.

12. A bridge according to either of claims 10 and 11, and wherein said robot can perform said surgical procedures on a plurality of said vertebrae with a single registration process.

13. A bridge according to any of claims 1 to 12, and also comprising a surgical robot attached to one of said vertebrae, such that said robot can perform surgical procedures on at least one of said vertebrae.



14. A bridge according to claim 13, and wherein said robot can perform said surgical procedures on a plurality of said vertebrae with a single registration process.

15. A bridge according to any of claims 1 to 9, and also comprising a navigational position probe associated with a computer assisted surgery system, such that the position of said bridge and of said vertebrae are known to said system.

16. A bridge assembly for use in surgery on the vertebrae of the spine of a subject, said bridge assembly comprising:

at least a first spinal bridge section comprising at least two support members, each of said support members being attached to one vertebra of said spine, and a cross member connecting said support members and attached thereto at positions remote from said vertebra attachment ends of said support members; and

at least a second spinal bridge section having two ends, one of said ends being attached to said at least a first spinal bridge section, and a second of said ends being attached by support members to either of the pelvic bone structure of the subject and the skull of the subject;

wherein said support members are such that said bridge assembly is positioned proximate said vertebrae of said spine.

17. A bridge assembly according to claim 16, and wherein said at least a second spinal bridge section comprises two spinal bridge sections, one attached at its second end to the pelvic bone structure of the subject and the other attached at its second end to the skull of the subject, such that said bridge assembly is positioned proximate vertebrae along the entire length of said spine.

18. A bridge assembly according to claim 17, and wherein said bridge comprises a lumbar, a cervical and at least one thoracic bridge sections.



19. A bridge assembly according to any of claims 16 to 18 and wherein said bridge assembly is free to move with movement of said spine of the subject.
20. A bridge assembly according to any of claims 16 to 18, and wherein said bridge sections are adapted to accommodate a surgical robot, such that said robot can perform surgical procedures on at least one of said vertebrae.
21. A bridge assembly according to claim 20, and wherein said surgical robot can be accommodated at any of a plurality of predefined positions along said bridge sections of said bridge assembly, such that said robot can perform said surgical procedures on a plurality of said vertebrae.
22. A bridge assembly according to either of claims 20 and 21, and wherein said surgical robot can perform said surgical procedures on a plurality of said vertebrae with a single registration process.
23. A bridge assembly according to any of claims 16 to 19, and also comprising a surgical robot attached to one of said vertebrae, such that said robot can perform surgical procedures on at least one of said vertebrae.
24. A bridge assembly according to claim 23, and wherein said surgical robot can perform said surgical procedures on a plurality of said vertebrae with a single registration process.
25. A bridge assembly according to any of claims 16 to 19, and also comprising a navigational position probe associated with a computer assisted surgery system, such that the position of any part of said bridge assembly and of said vertebrae are known to said system.